Interview Summary	Application No.	Applicant(s)	
	09/996,929	YAMAZAKI ET AL.	
	Examiner	Art Unit	
	Brian L. Albertalli	2626	

All participants (applicant, applicant's representative, PTO personnel):

(1) *Brian L. Albertalli*. (3)_____.

(2) *Nick Bromer*. (4)_____.

Date of Interview: *22 August 2006*.

Type: a)☐ Telephonic b)☐ Video Conference
c)☒ Personal [copy given to: 1)☐ applicant 2)☒ applicant's representative]

Exhibit shown or demonstration conducted: d)☐ Yes e)☒ No.
If Yes, brief description: _____.

Claim(s) discussed: *1*.

Identification of prior art discussed: *Murata et al. (U.S. Patent 5,925,146) and Walley et al. (U.S. Patent 5,8963,576)*.

Agreement with respect to the claims f)☐ was reached. g)☒ was not reached. h)☐ N/A.

Substance of Interview including description of the general nature of what was agreed to if an agreement was reached, or any other comments: *See Continuation Sheet*.

(A fuller description, if necessary, and a copy of the amendments which the examiner agreed would render the claims allowable, if available, must be attached. Also, where no copy of the amendments that would render the claims allowable is available, a summary thereof must be attached.)

THE FORMAL WRITTEN REPLY TO THE LAST OFFICE ACTION MUST INCLUDE THE SUBSTANCE OF THE INTERVIEW. (See MPEP Section 713.04). If a reply to the last Office action has already been filed, APPLICANT IS GIVEN A NON-EXTENDABLE PERIOD OF THE LONGER OF ONE MONTH OR THIRTY DAYS FROM THIS INTERVIEW DATE, OR THE MAILING DATE OF THIS INTERVIEW SUMMARY FORM, WHICHEVER IS LATER, TO FILE A STATEMENT OF THE SUBSTANCE OF THE INTERVIEW. See Summary of Record of Interview requirements on reverse side or on attached sheet.

DAVID HUDSPETH
SUPERVISORY PATENT EXAMINER
TECHNOLOGY CENTER 2600

Examiner Note: You must sign this form unless it is an Attachment to a signed Office action.

_____
Examiner's signature, if required

Continuation of Substance of Interview including description of the general nature of what was agreed to if an agreement was reached, or any other comments:

The Applicant argued that the upper limit data and lower limit data are not upper limits and lower limits of a waveform (i.e. the positive exursion and negative excursion of the waveform), but represent an "envelope" or "volume" of the Pulse Code Modulated (PCM) data. The lower limit data, therefore, does not represent the lowest allowed negative excursion, but rather the lowest "level" (e.g. a low volume limit) that is allowed. However, upon further review of the Applicant's claims and specification, the Examiner cannot agree with this interpretation, for the reasons outlined below.

According to Fig. 1, the input to the limiter circuit is a PCM signal P0 (see also page 8, lines 3-4). A PCM signal, by definition, is a digital representation of an analog signal where the amplitude of the signal is sampled at regular intervals then quantized to a series of symbols (see, e.g. Wikipedia article on Pulse Code Modulation, available at http://en.wikipedia.org/wiki/Pulse-code_modulation). A PCM signal, therefore, is simply a digital representation of an analog signal (or wave).

Fig. 2 illustrates an embodiment of the limiter circuit. In Fig. 2, the PCM signal is directly input to comparator circuits 201 and 202. The comparators make a direct comparison between the PCM signal (which is a digital representation of a wave), and the upper and lower limit data. That is, a sample of the PCM signal is input to the limiter and the sample (which represents one amplitude sample of an analog signal) is compared to the upper limit value and lower limit value to determine if that sample is above or below the upper and lower limit, respectively. This is in no way related to the envelope or volume of the PCM signal. If the limiter, as proposed by the Applicant, determined an upper volume limit and lower volume limit, the limiter would require some type of mechanism to determine the volume of the PCM signal (such as measuring the power of the PCM signal). This type of mechanism is absent from any of the disclosed embodiments.

Further evidence that the upper limit and lower limit represent a positive excursion and negative excursion, repsectively, is given on page 11, lines 13-16 of the Applicant's specification. Here, an example of the upper limit and lower limit is given. The specification indicates that the upper limit value is the largest *amplitude of the voice signal* and is given as +12. The specification furher indicates that the lower limit value is the smallest amplitude and is given as **–10**. If the lower limit were a lower volume limit, then the use of a negative value to represent the lower limit would not make sense.

Therefore, for the reasons given above, the Examiner maintains that the claimed "upper limit" is the highest allowed positive exursion of the input PCM signal, and the claimed "lower limit" is lowest allowed negative excursion of the input PCM signal. This action is identically disclosed by both Walley et al. and Holt et al., who feed a decoded PCM signal to a limiter to limit the positive and negative excursion of the PCM signal in order to reduce noise.

As indicated by the Examiner during the interview, both Walley et al. and Holt et al. disclose their respective limiters continue to limit the PCM signal after the error detected signal has stopped (see Fig. 2 of Walley et al. and Fig. 25 of Holt et al.). Fig. 5 of the Applicant's specification seems to indicate that the Applicant's invention only limits the PCM data while the error signal is occuring. That is, the limiter is turned on as soon as the error is detected, and turned off as soon as the error is not detected. Claim langauge that clearly indicated this feature would overcome both Walley et al. and Holt et al. However, such amendments to the claims may require further consideration and/or search.